

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (Currently amended) A probe positioning and bonding device comprising:

a stage unit disposed on a working table and supporting a probe substrate including a probe site to which at least one probe is bonded, wherein the stage unit is comprised of an x-axis moving stage, a y-axis moving stage, a z-axis moving stage, and a rotating stage, the rotating stage being rotated about the z-axis, and wherein the x-axis moving stage, the y-axis moving stage, the z-axis moving stage, and the rotating stage are vertically disposed one on another from bottom to top;

a microscope movably disposed above the stage unit while being supported by means of a first supporting member disposed on the working table;

a probe fixing unit disposed above the stage unit and below the microscope while being supported by means of a second supporting member disposed on the working table, the probe fixing unit gripping a probe and positioning the probe to the probe site of the probe substrate and moving along the second supporting member vertically to the working table; and

a light source unit supported by means of a third supporting member disposed on the working table, the light source unit being disposed toward the upper part of the stage unit, wherein the light source unit is a laser-generating apparatus.

2. (Cancelled)

3. (Previously Presented) the device as set forth in claim 1, wherein the probe fixing unit comprises:

a pincette for holding the probe;

a reciprocating mover having a piston structure driven by means of air or a solenoid for operating the pincette; and

a bracket for supporting the pincette and the reciprocating mover.

4. (Original) The device as set forth in claim 3, wherein the probe fixing unit further

comprises a z-axis moving stage connected to the bracket such that the stage is slidably moved on the second supporting member.

5. (Currently Amended) The device as set forth in claim 3, wherein the probe fixing unit further comprises:

an adjusting member for adjusting the position of the pincette in the x direction by a rotation about the x direction;

an open angle controller for restricting an open angle of the pincette to a prescribed limit; and a z-axis moving stage connected to the bracket such that the stage is slidably moved on the second supporting member, and

wherein the pincette has grooves formed at the insides of the lower ends thereof, respectively.

6. (Cancelled)

7. (Withdrawn) A probe bonding method comprising:

a step 1 for disposing a substrate having a bonding agent applied to a prescribed area thereof on a stage, and operating the stage to place a prescribed point of the substrate on the focal point of the microscope having the fixed position;

a step 2 for fixedly placing the probe on the focal point of the microscope to contact the probe to the prescribed point on the substrate; and

a step 3 for emitting a laser beam to the connected parts of the prescribed point and the probe to bond the probe on the substrate,

wherein a plurality of probes are bonded on the substrate by successively repeating the steps 1 to 3 so that the probes having a prescribed arrangement are formed on the substrate.

8. (Withdrawn) The method as set forth in claim 7,

further comprising, between the step 1 and the step 2, a step for unloading the stage from the focal point of the microscope to provide a space for a probe feeding operation,

wherein the unloaded stage is loaded to the focal point of the microscope at the step 2 so that the prescribed point on the substrate is connected to one end of the probe.

9. (Withdrawn) The method as set forth in claim 8,

further comprising, before the step 2, a step for fixing the probe to a prescribed part of the probe fixing unit disposed on the focal point of the microscope so that the probe is placed on the focal point of the microscope, and

further comprising, after the step 3, a step for releasing the bonded probe from the prescribed part of the probe fixing unit.

10. (Withdrawn) The method as set forth in claim 7,

wherein the probe is fixed to the prescribed part of the probe fixing unit placed on the focal point of the microscope to put the probe on the focal point of the microscope at the step 2 so that the probe is connected to the prescribed point on the substrate,

the method further comprising, after the step 3, a step for releasing the bonded probe from the probe fixing unit.

11. (New) An apparatus for positioning and bonding probes to a substrate of a probe card, comprising:

a stage unit on a working table, the stage unit being movable in three dimensions and supporting the substrate;

a microscope coupled to a first guide member positioned at a first portion of the working table and placed above the stage unit;

a probe fixing unit mounting on a supporting member in such a configuration that the probe fixing unit moves on the supporting member vertically to the working table, an end portion of the probe fixing unit to which a probe is fixed being interposed between the microscope and the stage unit so that the probe makes contact with the substrate at a connected portion thereof; and

a light source unit movably coupled to a second guide member positioned at a second portion of the working table, a laser being emitted to the connection portion of the substrate from the light source unit, to thereby bonding the probe to the substrate at the connection portion of the substrate.

12. (New) The apparatus of claim 11, wherein the stage unit includes an x-axis moving stage, a y-axis moving stage and a z-axis moving stage moving in an x-axis direction, a y-axis direction and a z-axis direction in a Cartesian coordinate system and a rotating stage rotated about the z-axis direction, and the x-axis moving stage, the y-axis moving stage, the z-axis moving stage and the rotating stage are vertically disposed one and another from bottom to top.

13. (New) The apparatus of claim 12, wherein the substrate is positioned on the stage unit by three-dimensional movement of the stage unit in such a configuration that the connected portion of the substrate corresponds to the probe gripped to the end portion of the probe fixing unit, and the position of the substrate is verified by the microscope.

14. (New) The apparatus of claim 11, wherein the probe includes a supporting beam and a probe tip positioned on a first end portion of the supporting beam, and the supporting beam of the probe is bonded to the connected portion of the substrate and the probe tip faces outwards.

15. (New) The apparatus of claim 14, wherein the probe fixing unit moves vertically on the supporting member upward without movement of the stage unit, so that another probe is gripped by the probe fixing unit without change of the position of the substrate on the stage unit.

16. (New) The apparatus of claim 11, wherein the first guide member includes a first supporting member fixed to the first portion of the working table and a first arranging member extending from an end portion of the first supporting member in a first direction and the second guide member includes a second supporting member fixed to the second portion of the working table and a second arranging member extending from an end portion of the second supporting member in a second direction opposite to the first direction, and the microscope is coupled to the first arranging member over the stage unit and the light source unit is mounted onto the second arranging member movably along the second arranging member close to or away from the microscope unit.

17. (New) The apparatus of claim 16, wherein the first and second guide members are positioned at both sides of the stage unit on the working table and the supporting member is positioned on a backside of the stage unit on the working table.

18. (New) The apparatus of claim 11, wherein the probe fixing unit includes:
a bracket moveably secured to the supporting member;
a pincette moveably secured to the bracket; and
a controller for controlling an open angle of the pincette, the controller being positioned at a side of the pincette and applying a pressure to the probe pincette.

19 (New) The apparatus of claim 18, wherein the pincette includes a head portion secured to the bracket and a gripping portion opposite to the head portion to which the probe is fixed.

20. (New) The apparatus of claim 19, wherein the gripping portion of the pincette includes a pair of grooves facing each other to which the probe is gripped.

21. (New) The apparatus of claim 19, wherein the bracket includes a pair of plates and a shaft interposed between the plates, so that the head portion of the pincette is secured to the shaft in a space between the plates.

22. (New) The apparatus of claim 21, wherein the bracket further includes an adjusting member installed to the shaft and the head portion of the pincette is secured to the adjusting member in such a configuration that the pincette linearly moves in accordance with a rotation of the adjusting member about the shaft.

23. (New) The apparatus of claim 19, wherein the controller includes an open angle controller positioned at a first side of the bracket and a reciprocating mover positioned at a second side opposite to first side of the bracket the bracket, so that the opening angle of the gripping portion of the pincette is controlled by the pressure applied by the controller.

24. (New) The apparatus of claim 23, wherein the reciprocating mover applies the pressure to the gripping portion of the pincette from the second side of the bracket while the open angle controller supports the gripping portion of the pincette at the first side of the bracket.

25. (New) The apparatus of claim 24, wherein the reciprocating mover applies the pressure to the gripping portion of the pincette by a piston operated by an air compressor or an electrical solenoid.